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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,283	03/25/2004	Helmut Hans	BOE01 049	5088

7590 03/10/2005

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EXAMINER	
NGUYEN, TRAN N	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/808,283	HANS, HELMUT	
	Examiner	Art Unit	
	Tran N. Nguyen	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1 and 3-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1 and 3-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date_____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objection

Claim 33 is objected to under 37 CFR 1.75 as being a substantial duplicate of **claim 28,** from which claim 33 depends. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-33 are rejected under 35 U.S.C. 102(b) as being fully anticipated by **Takezawa et al (US 6,147,428).**

Takezawa (figs 1-15) discloses the following:

Regarding claims 1, 13 and 15, Takezawa discloses an electric motor (2) comprising:

a stator (4) and

a rotor (5), wherein the rotor having:

a cylindrical rotor core (26) having a central aperture with bore (5a) defining a sleeve for through which a shaft (6) is coupled;

a plurality of permanent magnets (40-47) embedded in the rotor core,

the permanent magnets extending radially about the central aperture that has bore (5a); the rotor core being formed as an integral body; and

at least two permanent magnets radially bridged by an inner recess (55) in the rotor core to influence the magnetic field of the permanent magnets, and

the rotor core (26) being coupled to a shaft (6) and enclosed by the stator (4) enclosing (figs 1-2).

Regarding claims 3, 14, wherein like poles of the at least two permanent magnets (47-46, 45-44, 43-42, 41-40) are bridged by the inner recess (55) in the rotor core. In other words, each inner recess (55) adjoins at least two permanent magnets.

Regarding claim 4, wherein the at least two permanent magnets of are magnetized in the same magnetic direction (figs 2-3).

Regarding claim 5, wherein the permanent magnets are enclosed by the rotor core at least at an inner end, by bridge (52), and at an outer end, by bridge (56) (figs 2-3).

Regarding claims 6-8, wherein the rotor core defines a plurality of bridges (52) about the central aperture and the bridges enclose the inner recesses, and the bridges form an enclosure spanning radially between the inner ends of two adjacent permanent magnets.

Regarding claim 9, wherein the recesses are filled with air, i.e., air gaps.

Regarding claims 10-11, wherein the rotor core (26) further comprises a ferromagnetic material lamination sheets (27) constructed the laminated rotor core (26).

Regarding claim 12, wherein the rotor core further comprises a plurality of slots (36-39) for receiving permanent magnets (40-47).

Regarding claim 16, Takezawa discloses an electric motor (2) having

a stator (4) for receiving a rotor (5) coupled to a shaft (6) through a sleeve having a bore (5a),

the rotor defining a plurality of cavities (36-39) for receiving permanent magnets (40-47) and a plurality of flux guides (28-31) disposed between adjacent permanent magnets,

integrated rotor body (26) defining a recess (55) for magnetically relating adjacent magnets and a central aperture for directly coupling the rotor (5) to shaft (6).

Regarding claim 17, wherein the rotor further defines an outer bridge (32, 56) and an inner bridge (52).

Regarding claim 18, wherein the rotor is substantially cylindrical (figs 1-2).

Regarding claim 19, wherein the recess (55) bridges the like poles of the adjacent permanent magnets,

Regarding claim 20, wherein the adjacent magnets (40-47, 46-45, 44-43, 42-41) are substantially parallel (fig 2-3).

Regarding claim 21, wherein the adjacent magnets (47-46, 45-44, 43-42, 41-40) are at an acute angle with respect to each other.

Regarding claim 22, wherein the rotor forms a ring about the shaft by bore (5a) (figs 2-3).

Regarding claim 23, wherein the rotor further comprises a plurality of outer periphery recesses (32).

Regarding claims 24-29 and 33, Takezawa discloses a rotor for use with an electric motor, the rotor (5) comprising:

a central aperture, which formed by bore (5a) for receiving a shaft (6),

a plurality of flux guides (28-31) defining therebetween a plurality of primary recesses (36-39) for receiving magnetic devices (40-47) and

a plurality of secondary recesses (55) magnetically connecting magnetic devices,

wherein:

the secondary recess (32) couples like poles of magnetic devices;

the rotor further comprises at least one outer periphery recess (32);

the at least one outer periphery recess (32) is positioned adjacent to primary recess (36-39) that embedding the magnetic device (40-47);

the plurality of flux guides (28-31) further comprises ferromagnetic sheet metal laminates (27) that inherently prevent electromagnetic eddy current due to the increased value of ohmic resistance in the laminated core.

Regarding claims 30-32, Takezawa discloses an electric motor comprising:

a stator having a stator core (4) and at least one stator winding (7);

a rotor assembly (5) separated from the stator by a gap (figs 2-3),

the rotor defining a central aperture, formed by bore (5a),

a plurality of flux guides (28-31),
a plurality of slots (36-39) for receiving permanent magnets (40-47), and
a plurality of recesses (55) for magnetically connecting permanent magnets;
a shaft (6) radially coupled to the rotor assembly (5) through the central aperture; and
a motor housing (1) for receiving the stator, the rotor and the shaft (fig 1),
wherein
the rotor assembly further comprises at least one outer periphery recess (32); and,
the at least one outer periphery recess is positioned adjacent to primary recess (36-39),
and, the plurality of flux guides (28-31) further comprise a ferromagnetic sheet metal laminates (27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 34-37** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Takezawa** in view of level of ordinary skills of a worker in the art.

As discuss above, **Takezawa** discloses a motor structure, particularly a rotor structure having: laminated core, embedded magnets, inner recesses bridging the two adjacent magnets' inner edges, and outer peripheral recesses bridging the magnets' outer edges. These features would suppress the leakage of the magnetic flux on the inner end portion of each of the magnets. The cause of eddy current is due to magnetic flux leakage; thus, Takezawa discloses the rotor having

inner recesses and outer recesses that reduce magnetic leakage would result in minimize eddy current. Hence, since the structure of a reduced-eddy current in a motor is disclosed, those skilled in the art would understand that an artisan would have the necessary skills and ordinary knowledge to derive, from the Takezawa's disclosure, a formulate method of reducing electromagnetic eddy current formation in the motor, as in claims 34-37, because these processing steps of minimize eddy current are the counter parts of the structural features disclosed by Takezawa.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to formulate a method of reducing electromagnetic eddy current formation in the motor, as taught by Takezawa. Doing so would require only the necessary and ordinary skills in the art because these processing steps of minimize eddy current are counter parts of the structural features that disclosed by Takezawa.

Double Patenting

Claims 1, 3-37 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **claims 1-37 of copending Application No. 10/830,474**. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the present application and the **copending Application No. 10/830,474** claims the same invention with following recited features:

an electric motor (2) comprising:

a stator and

a rotor wherein the rotor having:

a cylindrical rotor core having a central aperture defining a sleeve for through which a shaft is coupled;

a plurality of permanent magnets embedded in the laminated rotor core,

the permanent magnets extending radially about the central aperture; the rotor core being formed as an integral body; and

at least two permanent magnets radially bridged by an inner recess (55) in the rotor core to influence the magnetic field of the permanent magnets, and

the rotor core being coupled to a shaft (6) and enclosed by the stator enclosing therearound, and

a housing covering the rotor and the stator,

wherein

the like poles of the at least two permanent magnets are bridged by the inner recess in the rotor core. In other words, each inner recess adjoins at least two permanent magnets;

the at least two permanent magnets of are magnetized in the same magnetic direction;

the permanent magnets are enclosed by the rotor core's magnet insertion recesses, at least at an inner end, by bridges;

the rotor core defines a plurality of bridges about the central aperture and the bridges enclose the inner recesses, and the bridges form an enclosure spanning radially between the inner ends of two adjacent permanent magnets.

This is a ***provisional*** obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N. Nguyen whose telephone number is (571) 272-2030. The examiner can normally be reached on M-F 7:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571)-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tran N. Nguyen
Primary Examiner
Art Unit 2834